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OBSERVATIONS OF AN UNIDENTIFIED OBJECT SEEN NEAR THE SUN ON SUNDAY, AUGUST 7, 1921

The sunset phenomena on Sunday evening, August 7th, were especially interesting, and Captain Eddie V. Rickenbacher, Major Reed Chambers and Mrs. Chambers, Professor Henry Norris Russell, director of the Princeton Observatory, New Jersey, Mrs. Campbell and Director Campbell, were observing them from the porch of Mr. Campbell's residence. There were highly colored clouds at considerable altitudes in the western sky, and a shallow stratum of thin clouds adjoining the horizon, with clear sky between the two cloud areas described.

As soon as the Sun's lower limb touched the apparent horizon, which consisted of haze, smoke and light clouds, the Sun's image began to pass thru the interesting series of geometrical figures so frequently observed here, especially in the summer months. Starting with the ellipse, the succeeding figures resembled the old-fashioned Rochester lamp shade, the straw hat now in vogue with men, an extremely elongated ellipse, the cigar form, and finally, at disappearance, the knitting needle form. The last figure endured for at least a minute of time. Just as this figure was disappearing Major Chambers said, "What star is that to the left of the Sun?" Captain Rickenbacher said that he had been watching that star for several minutes, but had not mentioned it because he supposed it was well known. Major Chambers said that he had seen it at least a minute or two and had not spoken of it for the same reason. Mrs. Chambers, Professor Russell and Director Campbell saw the starlike body immediately. Mrs. Campbell went into the house to secure a pair of binoculars. Within a minute she had handed them to Director Campbell, who saw the object in the binoculars not more than two seconds before it disappeared behind the horizon cloud stratum.

The five observers agreed that the object was starlike. Director Campbell remarked that it was probably *Mercury*, but Professor Russell said at once that it was entirely too bright for *Mercury*. Shortly following its disappearance the observers compared notes as to the position of the object and as to its color. Captain Rickenbacher said it was six solar diameters from the Sun, and that the line joining Sun and object made an angle of 45 degrees with the vertical line thru the Sun's center. Major Chambers indicated graphically the angle, and his estimate agreed with that made by

Director Campbell as 50 degrees southerly from the vertical. Russell and Campbell estimated the distance from the Sun's center at three degrees. Campbell thought that the color of the object was yellower than a star in that position would be, but it must be remembered that the Sun at disappearance had a true zenith distance approximating 93 degrees and that the true zenith distance of the object must have been between 91 and 92 degrees. *Venus* has frequently been observed to set below the western mountains at approximately that zenith distance, as a bright object and with color not distinctly orange or red. Russell and Campbell agreed that the object observed was brighter than *Venus* would have been if seen in the same position and circumstances as the strange body.

The observers had no reason to doubt that the object was genuinely celestial, as in the binoculars its diameter still seemed stellar. It seemed to partake of the diurnal motion of the stars in that it moved down toward the lower cloud stratum and disappeared behind it. To imagine an object in our own atmosphere which would have supplied all of the phenomena described seemed entirely too difficult.

There was no further opportunity to study the object. After dark Professor Russell, from the *Nautical Almanac*, determined the position of *Mercury* to have been below and to the right of the Sun. All of the other bright planets were likewise accounted for. The question of notifying other observatories by telegraph was carefully considered. What could the object be? Its brightness, as seen on the sunset sky, its position close to the Sun and its sudden appearance as an unobserved object, suggested strongly the nucleus of a comet which had approached the Sun in such a direction as to escape notice. There seemed no alternative except that of a new star, such as, but much brighter than, the one which suddenly appeared in June, 1918, in the constellation *Aquila*. Clearly it was our duty not to withhold information from astronomers in other parts of the world, awaiting confirmation on Monday evening, but the facts should be communicated, in order that no opportunities for observing the strange body should be sacrificed. A message was accordingly dispatched at 11 P. M. to the Harvard College Observatory for distribution to the other observatories. The message, composed by Professor Russell and Director Campbell, read as follows:

"Star-like object certainly brighter than *Venus* three degrees east, one degree south of Sun seen several minutes before and at sunset by naked eye. Five observers. Set behind low clouds. Unquestionably celestial object. Chances favor nucleus bright comet, less probably nova."

Careful search for the object at sunrise Monday morning, sunset Monday evening and at sunrise Tuesday morning was unsuccessful. If the object is a comet, its position could not be predicted because the orbit is totally unknown. It might be too near the Sun, either between Sun and Earth or on the far side of the Sun. If the object was a new star, it should have been observable Monday evening unless the brightness was greatly reduced. In the latter case there will be little chance of observing the object in the bright sky surrounding the Sun, for several weeks to come. The position of the object, R. A. 9^h22^m, Dec. $+15\frac{1}{2}°$, about 40° from the galactic plane, militates against the nova hypothesis.

W. W. CAMPBELL.

Mount Hamilton, California,
August 9, 1921

LETTERS RELATING TO THE PRECEDING NOTE

(The following letter is reprinted from *The English Mechanic*, issue for August 19. 1921, page 49, copy having been supplied thru Miss Calvert and Professor Barnard.)

NEW STAR, OR COMET, OR WHAT?

A few days ago the statement appeared in our newspapers that an observer at the Lick Observatory had seen, on the evening of August 7th, a bright star near the Sun, and that it was visible without optical aid. My experiences on that evening may be worth recording. About 8:30 on that Sunday evening I noticed a bit of very clean sky over the place of the recently set Sun, and thinking I might pick up Jupiter and Saturn, I took my binoculars (power about 3) and commenced to search. I soon alighted upon a bright object, which I at the moment thought was Jupiter, but the next moment I saw was not a planet at all; neither did I think it was a star. It was elongated in the direction of the Sun, and was of a distinct reddish tinge. I judged it to be about 6° from the Sun and a very little south of him. It was unfortunate that I was not able to get the telescope on the object, as it was too low. I only held it for about three minutes, as clouds came and hid it.

If the object which I saw was the same as that seen by the American observer, and if our estimates of its position were fairly accurate, then the object must have passed inwards towards the Sun